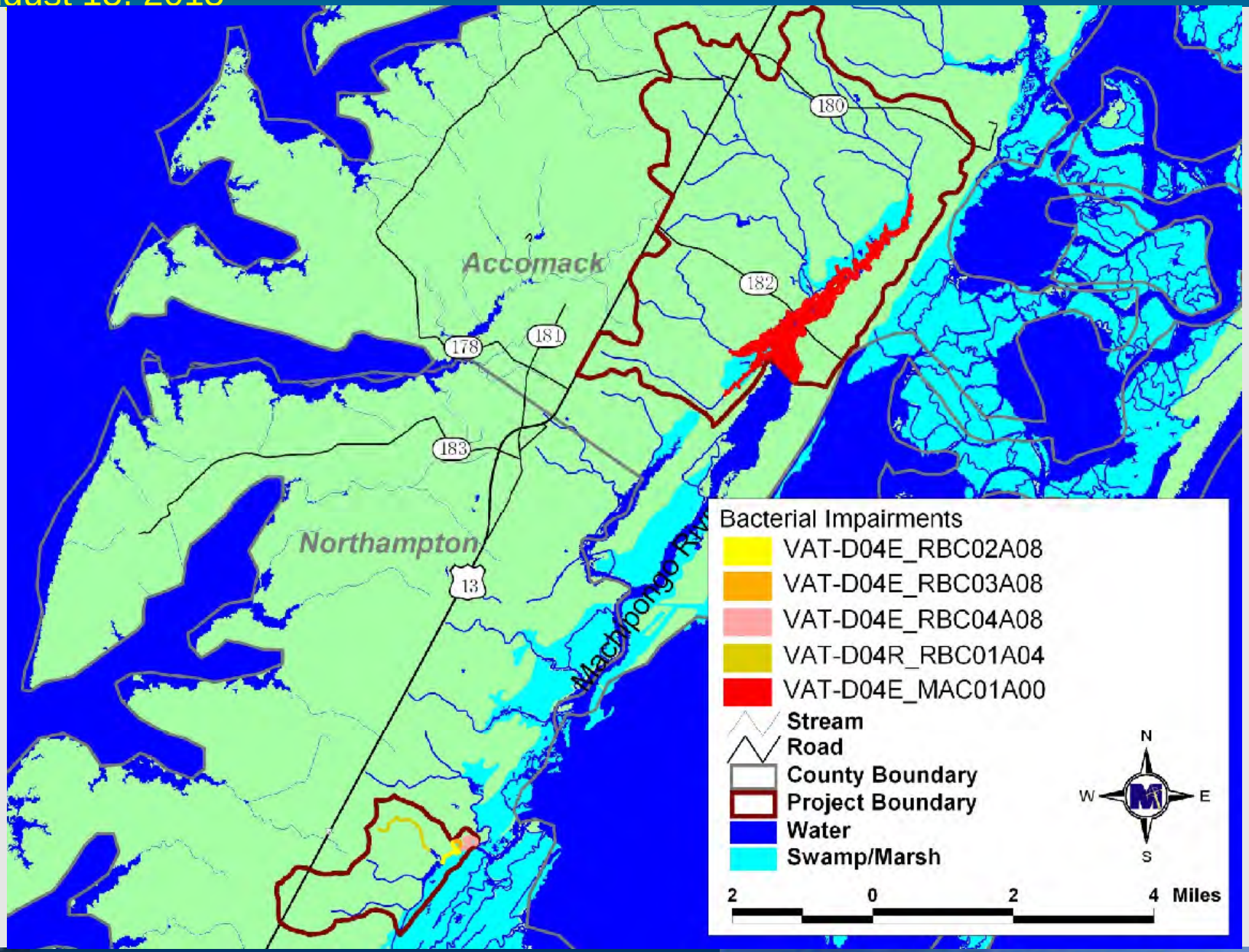
Red Bank Creek and Machipongo River Watersheds TMDLs Final Public Meeting

August 15, 2013

Bacteria Impairments

Stream Name Impairment ID	Initial Listing Year	2012 Square Miles/ R.Mi.	2012 Listing Violation %	Impairment Location Description
VAT-D04R_RBC01A04	2012	1.27 RM	E. coli	From the headwaters to the end of tidal waters.
Red Bank Creek VAT-D04E_RBC02A08	2008	0.01	33.3 Ent	Approximately 0.37 miles from an unnamed tributary to a boat dock.
Red Bank Creek VAT-D04E_RBC03A08	2008	0.00	33.3 Ent	At the end of Route 617 at Public Boat Landing.
Red Bank Creek VAT-D04E_RBC04A08	2008	0.01	33.3 Ent	From the Little Stony Creek confluence downstream to the Staunton Creek confluence.
Machipongo River VAT-D04E_MAC01A00	2008	0.67	13.3 Ent	Located east of Exmore and extends from end of tidal waters downstream to 0.5 mi south of Rt. 182 crossing (minus area at mouth of Greens Creek).

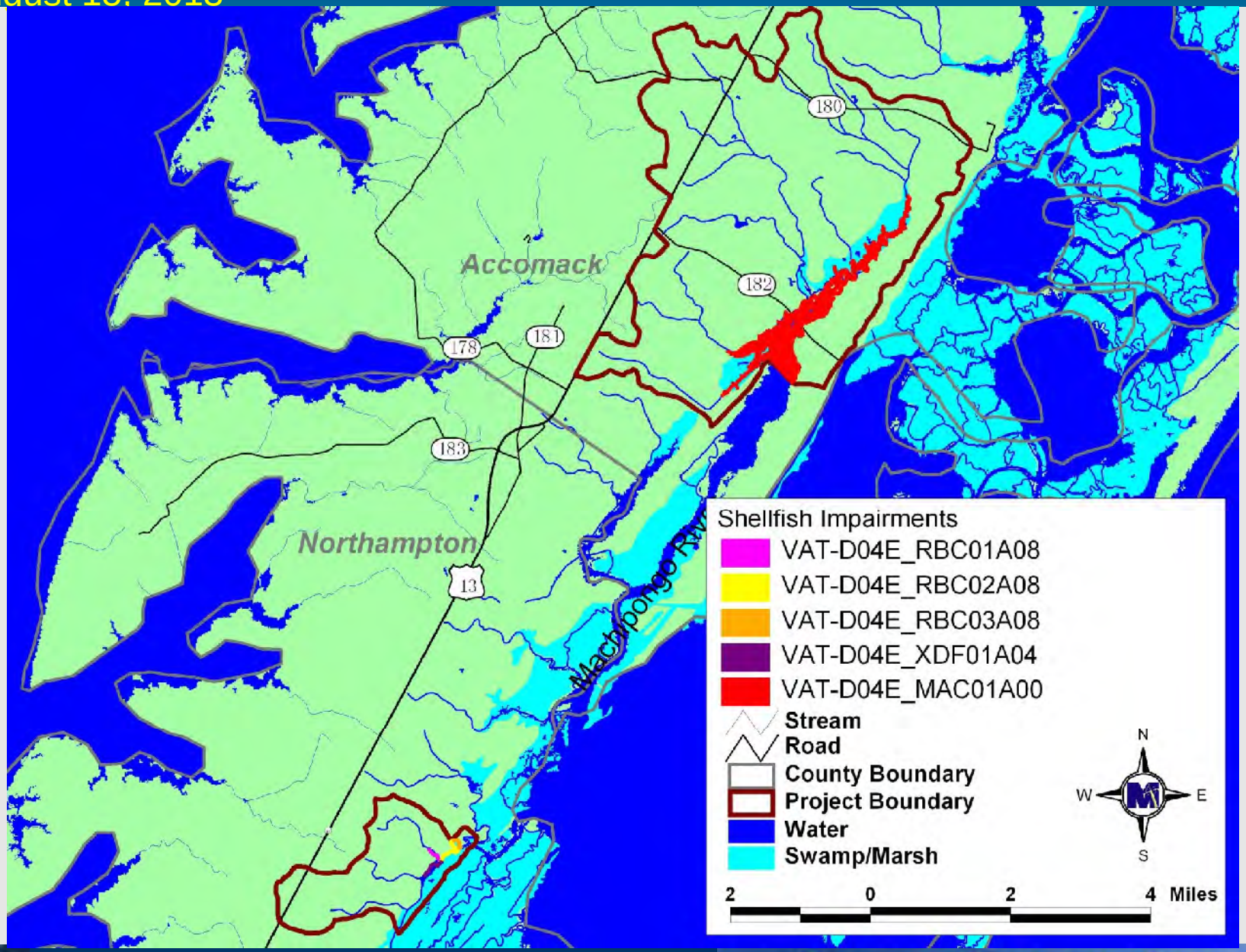
Ent – *Enteroccoci* Bacteria, VADEQ Water Quality Standard = 104 cfu/100 mL
E. Coli – Bacteria, VADEQ Water Quality Standard = 126 cfu/100 mL


Accomack
Northampton
180
182
181
178
183
13
Machipongo River
Bacterial Impairments
VAT-D04E_RBC02A08
VAT-D04E_RBC03A08
VAT-D04E_RBC04A08
VAT-D04R_RBC01A04
VAT-D04E_MAC01A00
Stream
Road
County Boundary
Project Boundary
Water
Swamp/Marsh
N
W
E
S
2
0
2
4 Miles

Shellfish Impairments

Stream Name Impairment ID	Initial Listing Year	2012 Square Miles	2012 Listing Violation	Impairment Location Description
Red Bank Creek VAT-D04E_RBC02A08	2006	0.01	#095-192 A	Approximately 0.37 miles from an unnamed tributary to a boat dock.
Red Bank Creek VAT-D04E_RBC03A08	2006	0.00	#095-192 A	At the end of Route 617 at Public Boat Landing.
Red Bank Creek VAT-D04E_RBC01A08	2006	0.01	#095-192 A	From the Little Stony Creek confluence downstream to the Staunton Creek confluence.
Unnamed Tributary to Red Bank Creek VAT-D04E_XDF01A04	2006	0.01	#095-192 A	Begins southeast of Marionville, near Brick House Neck from first branching of creek (RM 0.3) downstream to confluence with Red Bank Creek.
Machipongo River VAT-D04E_MAC01A00	2008	0.67	#096-218 A	Located east of Exmore and extends from end of tidal waters downstream to 0.5 mi south of Rt. 182 crossing (minus area at mouth of Greens Creek).

August 15, 2013



Red Bank Creek & Machipongo River TMDL Development

MAPTECH

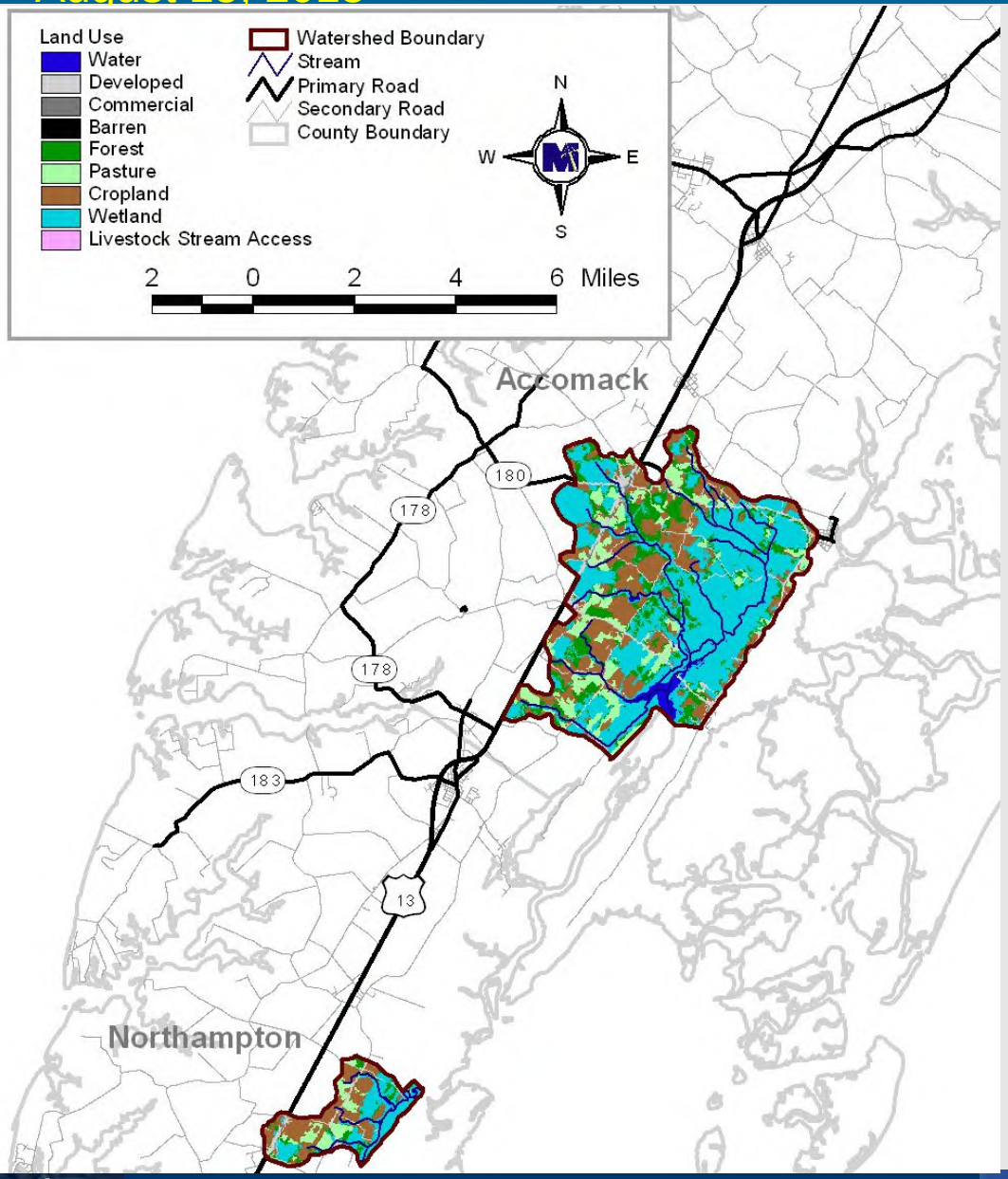
NATURAL RESOURCE SOLUTIONS THROUGH Science AND Engineering

What is a TMDL?

1. Total Maximum Daily Load (TMDL) is a term used to describe the amount of pollution a stream can receive and still meet Water Quality Standards.

2. Water quality standards are regulations based on federal or state law that set numeric or narrative limits on pollutants.

3. TMDLs are required for water bodies that are determined to be impaired due to exceedance of water quality standards.



Land Uses:

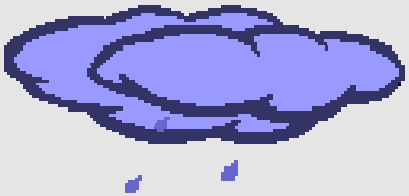
wetland > cropland > pasture

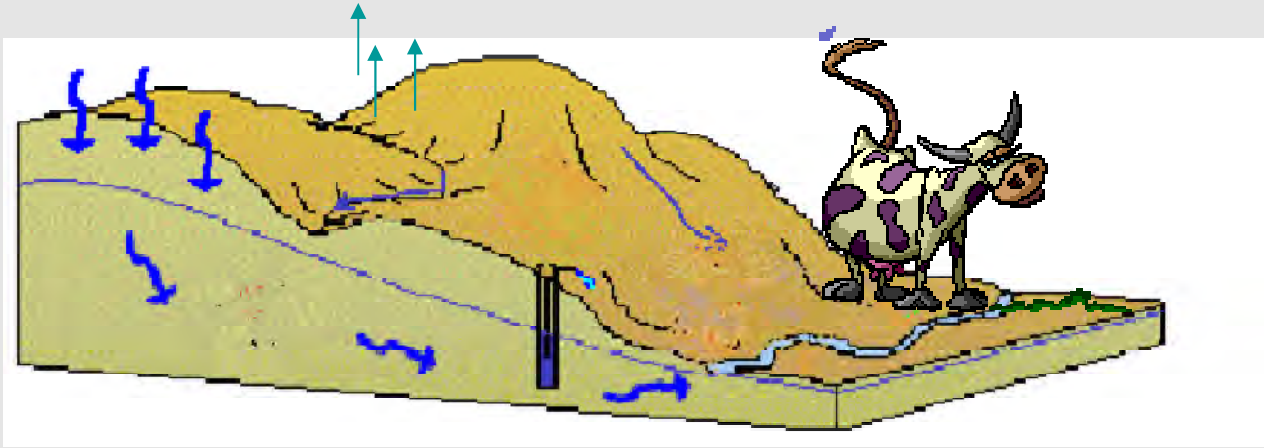
Bacteria Sources:
wildlife, human, pets, livestock

Impairment	Deer	Turkey	Raccoon	Muskrat	Duck	Goose
Red Bank Creek	216	20	148	152	32	16
Machipongo River	1,425	161	970	827	172	85
Total	1,641	181	1,118	979	204	101

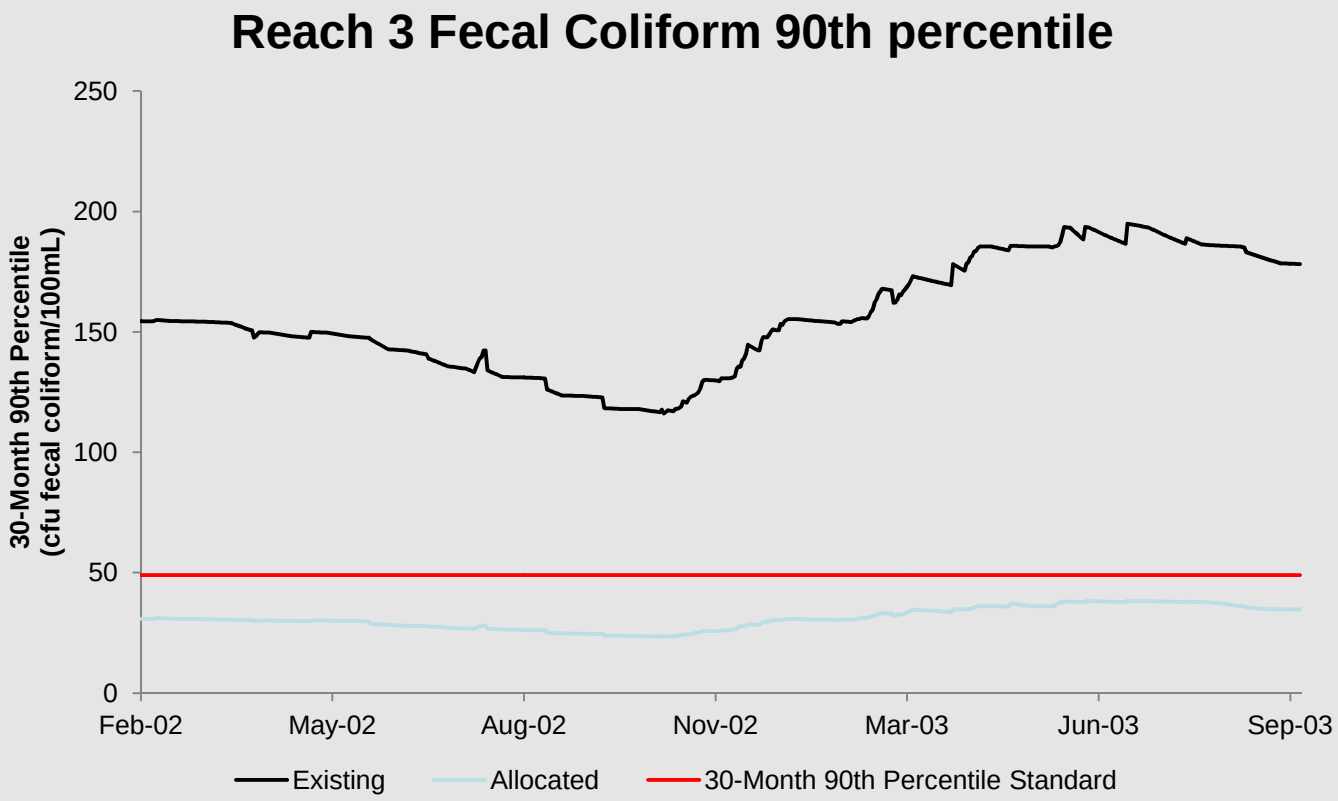
Modeling - Bacteria

- Rainfall-Runoff-Water Quality
  - Hydrologic Simulation Program – Fortran (HSPF)
    - Watershed-based
    - Continuous time interval
    - Land-applied, direct loads





Modeling Result, Shellfishing



Recreational Impairments TMDLs Results

% Reduction in Fecal Bacteria (*Enterococci*)

Watershed	Wildlife Direct Deposi-tion	Forest, Wetlands, Barren, Comm.	Livestock Direct Deposi-tion	Cropland/ Pasture	Straight Pipes	Developed
Red Bank Cr.*	99	99	43	45/40	100	40
Red Bank Cr.	84	84	0	0/100	100	83
Machipongo R.	79	79	75	100/100	100	95

* .. *E. coli*

Shellfish Impairments TMDLs Results

% Reduction in Fecal Bacteria (Fecal Coliform)

Water-shed	Wildlife Direct Deposi-tion	Forest, Wetlands, Barren, Comm.	Livestock Direct Deposi-tion	Cropland/ Pasture	Straight Pipes	Developed
Red Bank Cr.	84	84	0	0/100	100	83
Machipongo R.	79	79	75	100/100	100	95

Consequences of the TMDLs

- Failing septic systems, straight pipes, sewer overflows must be corrected
- Owners must pick up after their pets
- Livestock must be excluded from the streams
- Bacteria running off the land during rain events must be reduced, trapped, and/or filtered before entering the stream

Red Bank Creek Low Dissolved Oxygen Impairments

- Natural swamp water conditions are present.
- High nutrients and organic matter from anthropogenic impacts are not present. The anthropogenic organic matter that is present will be controlled by the bacteria TMDLs.
- Salinity from salt water intrusion impacts dissolved oxygen concentrations.
- The Low DO impairments are due to natural causes. A TMDL is not required.

What's next?

- 30-day comment period: Aug 16 – Sep 16
- Submit to EPA and State Water Control Board

Contact Information

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